

### ABSTRACT

An improved process and device for the recovery of the minor actinides and the transuranic elements (TRU's) from a molten salt electrolyte. The process involves placing the device, an electrically non-conducting barrier between an anode salt and a cathode salt. The porous barrier allows uranium to diffuse between the anode and cathode, yet slows the diffusion of uranium ions so as to cause depletion of uranium ions in the catholyte. This allows for the eventual preferential deposition of transuranics present in spent nuclear fuel such as Np, Pu, Am, Cm. The device also comprises an uranium oxidation anode. The oxidation anode is solid uranium metal in the form of spent nuclear fuel. The spent fuel is placed in a ferric metal anode basket which serves as the electrical lead or contact between the molten electrolyte and the anodic uranium metal.